

Floral evolution.—In a series of papers published in *New Phytologist* during 1911 and 1912, WERNHAM has discussed floral evolution, especially with reference to the phylogeny of the Sympetalae. The last paper²⁵ presents the summary and conclusions, and it is announced that the series has now appeared in book form. The immense amount of material presented cannot be mentioned in a review, but the general conclusion is that the Sympetalae are polyphyletic, having been derived from the Archichlamydeae along 7 distinct lines. The names given by the author to these lines will indicate the relationship of the various sympetalous orders to those of the Archichlamydeae. The lines are as follows: (1) Centrospermae-Primulales; (2) Geraniales-Ericales; (3) Guttiferales-Ebenales; (4) Geraniales (Plantaginales)-Convolvulales-Tubiflorae; (5) Calyciflorae-Umbelliflorae-Rubiales-Dipsacales; (6) Calyciflorae-Campanulatae; (7) Calyciflorae-Passiflorales-Cucurbitales. There is also a very useful discussion of the method of determining plant affinities and of the principles of classification.—J. M. C.

Resistance against attack of dodder.—By growing *Cuscuta Gronovii* on a great variety of hosts, GERTZ²⁶ has studied various means of protection possessed by plants against the attack of dodder. The main means found are mechanical resistance to penetration, high concentration of oxalic acid, and presence of latex, certain alkaloids, or ethereal oils. Various alkaloids and ethereal oils, in the concentration existing in the hosts tested, vary greatly in their effectiveness from indifferent to rather highly toxic. In comparing his results with rather fully reported results of other workers, GERTZ concludes that different species of dodder vary greatly in their resistance to a given protective substance. He notes the presence of the 3 characters of dodder often reported: resorption of the basal part of the sprout, ability to act in part as an autotroph by chlorophyll development, and impermeability of haustoria to certain toxic materials. This subject is in need of thorough microchemical and physiological study.—WILLIAM CROCKER.

Cercospora beticola.—POOL and MCKAY^{27, 28} have made a detailed study of the parasitism of *Cercospora beticola* on the sugar beet (*Beta vulgaris*), paying special attention to climatic factors and the mode of infection. The leaves that show maximum stomatal opening, both in aperture and in duration of opening, showed the greatest susceptibility to infection. Factors that favor

²⁵ WERNHAM, H. F., Floral evolution, with particular reference to the sympetalous dicotyledons. *New Phytol.* 11:373-397. 1912.

²⁶ GERTZ, OTTO., Über die Schutzmittel einiger Pflanzen gegen schmarotzende *Cuscuta*. *Jahrb. Wiss. Bot.* 56:123-154. 1915. PFEFFER'S Festschrift.

²⁷ POOL, V. W., and MCKAY, M. B., Relation of stomatal movement to infection by *Cercospora beticola*. *Jour. Agric. Research* 5:1011-1038. pls. 80, 81. figs. 6. 1916.

²⁸ ———, Climatic conditions as related to *Cercospora beticola*. *Jour. Agric. Research* 6:21-60. pls. 3, 4. figs. 10. 1916.